

WHAT IS CLAIMED IS:

1 1. An image converting apparatus for converting document data  
2 constituted by containing plural sorts of draw objects into image data  
3 constituted by a plurality of pixel data, comprising:

4 first conversion means for converting said document data into first  
5 image data;

6 second conversion means for converting said first image data into  
7 second image data; and

8 a plurality of tables provided in correspondence with at least one  
9 of plural sorts of draw objects and containing information to which the  
10 image converting apparatus refers when said first image data acquired by  
11 converting the sort of draw object corresponding thereto is converted into  
12 said second image data; wherein:

13 said second conversion means includes:

14 area unit conversion means, as to each of areas obtained by  
15 subdividing said first image data by plural number, for converting first  
16 image data of said area into second image data, while referring to said  
17 table corresponding to a sort of draw object contained in said area; ?

18 pixel unit conversion means, as to each of pixel data constituting  
19 said first image data, for converting said pixel data into second image data,  
20 while referring to said table corresponding to a sort of draw object  
21 indicated by said pixel data; and

22 conversion switching means for applying said pixel unit  
23 conversion means to such an area wherein at least two said tables are ?  
24 corresponded to sorts of draw objects contained therein, and for applying

25 said area unit conversion means to such an area wherein one said table is  
26 corresponded to a sort of a draw object contained therein or to such an  
27 area containing no draw object, within said first image data.

1 2. An image converting apparatus for converting document data into  
2 image data constituted by a plurality of pixel data, said document data  
3 being constituted by containing a draw object classified as draw data and  
4 also a draw object classified as image data, comprising:

5 first conversion means for converting said document data into first  
6 image data;

7 second conversion means for converting said first image data into  
8 second image data;

9 a first table containing information to be referred to when first  
10 image data obtained by converting the draw data is converted into second  
11 image data; and

12 a second table containing information to be referred to when first  
13 image data obtained by converting the image data into second image data;  
14 wherein:

15 said second conversion means includes:

16 area unit conversion means operated in such a manner that as to  
17 each of areas obtained by subdividing said first image data by plural  
18 number, when a draw object contained in said area is classified as the  
19 draw data, first image data of said area is converted into second image  
20 data with reference to said first table, whereas when said draw object is  
21 classified as image data, first image data contained in said area is  
22 converted into second image data with reference to said second table;

23 pixel unit conversion means operated in such a manner that as to  
24 each of pixel data for constituting said first image data, when a draw  
25 object indicated by said pixel data is classified as draw data, said pixel  
26 data is converted into second image data with reference to said first table,  
27 whereas when said draw object is classified as image data, said pixel data  
28 is converted into second image data with reference to said second table;  
29 and

30 conversion switching means for applying said pixel unit  
31 conversion means to such an area containing both the draw object  
32 classified as the draw data and the draw object classified as the image data,  
33 and for applying said area unit conversion means to such an area  
34 containing any one of said draw objects classified as the draw data and the  
35 image data within said first image data.

1 3. An image converting apparatus as claimed in claim 2 wherein:

2 as to each of the areas obtained by subdividing said first image  
3 data by the plural number, in such a case that a draw object is not  
4 contained in said area, said area unit conversion means converts first  
5 image data of said area into second predetermined image data without  
6 reference to said first table and said second table; and

7 as to each of the pixel data constituting said first image data, in  
8 such a case that said pixel data does not indicate a draw object, said pixel  
9 unit conversion means converts said pixel data into second predetermined  
10 image data without referring to said first table and said second table.

1 4. An image converting apparatus as claimed in claim 2, further

2 comprising:

3 first judging means operated, prior to the conversion of document  
4 data into first image data by said first conversion means, in such a manner  
5 that when said document data is converted into said first image data, as to  
6 each of first areas obtained by subdividing said first image data by plural  
7 number, said first judging means judges a draw object contained in said <sup>112</sup> each  
8 area;

9 second judging means for judging as to whether or not both a draw  
10 object classified as draw data and a draw object classified as image data  
11 are contained in each of plural second areas which are arranged by  
12 containing at least one of said first areas based upon the judgment result  
13 of said first judging means; and

14 third judging means operated in such a manner that while said  
15 document data is converted into the first image data by said first  
16 converting means as to each of the pixel data contained in said second area  
17 which is judged by said second judging means in such a way that both the  
18 draw object classified as the draw data and the draw object classified as  
19 the image data are contained therein, said third judging means judges the  
20 draw object indicated by said pixel data; wherein: .

21 said conversion switching means applies said area unit conversion  
22 means to such a second area which is not judged by said second judging  
23 means in such a way that both the draw object classified as the draw data  
24 and the draw object classified as the image data are contained therein, and  
25 further, applies said pixel unit conversion means to such a second area  
26 which is judged by said second judging means in such a way that both  
27 said draw objects classified as the draw data and the image data are

28 contained;

29       said area unit conversion means determines said first table and  
30 said second table, which should be referred to in the case that as to the  
31 second area application-instructed by said conversion switching means,  
32 first image data contained in this second area is converted based upon the  
33 judgment result of said first judging means; and

34       said pixel unit conversion means determines said first table and  
35 said second table, which should be referred to in the case that as to each of  
36 the pixel data contained in the second area application-instructed by said  
37 conversion switching means, said pixel data is converted based upon the  
38 judgment result of said third judging means.

1     5.       An image converting apparatus as claimed in claim 4, wherein:

2       said first area is a cell;

3       said second area is constituted by plural number of said cells  
4 located adjacent to each other;

5       while using a cell unit management table which is constituted by a  
6 plurality of entries corresponding to the respective cells, said first judging  
7 means describes into each of entries of said cell unit management table,  
8 the judgment results of the draw objects contained in said cells  
9 corresponding to said entries; and

10       said second judging means judges as to whether or not both the  
11 draw object classified as the draw data and the draw object classified as  
12 the image data are contained in said second area by checking the judgment  
13 results of the draw objects described in the respective entries  
14 corresponding to said plurality of cells contained in said second area.

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1 6. An image converting apparatus as claimed in claim 4, wherein:  
2 while said third judging means uses the pixel unit management  
3 table constituted by a plurality of entries corresponding to the respective  
4 pixel data contained in said second area which is judged by said second  
5 judging unit in such a way that both the draw object classified as the draw  
6 data and the draw object classified as the image data are contained, said  
7 third judging means describes the judgment results of the draw objects  
8 indicated by the pixel data corresponding to said entries into said  
9 respective entries of said pixel unit management table.

1 7. An image converting apparatus as claimed in claim 2, wherein:  
2 said first image data is RGB image data;  
3 said second image data is CMYK image data; and  
4 said first and second tables correspond to such tables on which  
5 color correction information is described, when the RGB image data is  
6 converted into the CMYK image data, said color correction information  
7 being referred to.

○ 1 8. An image converting apparatus as claimed in claim 2, further  
2 comprising:  
3 area unit judging means operated, prior to the conversion of  
4 document data into first image data by said first conversion means, in  
5 such a manner that when said document data is converted into said first  
6 image data, as to each of cells obtained by subdividing said first image  
7 data by plural number, said area unit judging means judges a draw object  
8 contained in said cell, and also describes the judgement result in an entry

9 corresponding to said cell, provided in a cell unit management table which  
10 is constituted by a plurality of entries corresponding to said respective  
11 cells; and

12 pixel unit judging means operated in such a manner that while said  
13 document data is converted into the first image data by said first  
14 converting means, as to each of the pixel data contained in the cells  
15 corresponding to such entries contained in said cell unit management  
16 table to which such a fact is described that both a draw object classified as  
17 draw data and a draw object classified as image data are contained, said  
18 pixel unit judging means judges a draw object indicated by said pixel data,  
19 and also describes the judgement result in an entry corresponding to said  
20 pixel data, provided in a pixel unit management table which is constituted  
21 by a plurality of entries corresponding to said respective pixel data;  
22 wherein:

23 said conversion switching means applies said pixel unit conversion  
24 means to a cell corresponding to the entry contained in said cell unit  
25 management table to which such a fact is described that both the draw  
26 object classified as the draw data and the draw object classified as the  
27 image data are contained, and also applies said area unit conversion  
28 means to cells other than said cell;

29 said area unit conversion means determines said first table and  
30 said second table which should be referred to in such a case that as to the  
31 cell application-instructed by said conversion switching means, such a fact  
32 is described that any one of said draw object classified as the draw data  
33 and said draw object classified as the image data is contained in the entry  
34 corresponding to said cell of said cell unit management table, depending

35 upon the sort of said draw object; said area unit conversion means  
36 converts first image data contained in said cell into second image data by  
37 employing the determined table; whereas in the case that such a fact that  
38 the draw object is contained is not described in the entry corresponding to  
39 said cell, provided in said cell unit management table, said area unit  
40 conversion means converts the first image data contained in said cell into  
41 predetermined second image data without referring to said first table and  
42 said second table; and

43       said pixel unit conversion means determines said first table and  
44 said second table, which should be referred to in such a case that as to  
45 each of pixel data contained in the cell application-instructed by said  
46 conversion switching means, such a fact is described that any one of said  
47 draw object classified as the draw data and said draw object classified as  
48 the image data is contained in the entry corresponding to said cell of said  
49 cell unit management table, depending upon the sort of said draw object;  
50 said pixel unit conversion means converts said pixel data into second  
51 image data by employing the determined table; whereas in the case that  
52 such a fact that the draw object is contained is not described in the entry  
53 corresponding to said pixel data, provided in said pixel unit management  
54 table, said pixel unit conversion means converts the pixel data into  
55 predetermined second image data without referring to said first table and  
56 said second table.

- 1     9.       A print control apparatus for controlling a printer, comprising:  
2             the image converting apparatus recited in claim 2 wherein:  
3             said print control apparatus controls printing operation of said



4 printer in response to said image data produced by said image converting  
5 apparatus.

1 10. A storage medium for storing therein a program used to convert  
2 document data constituted by containing plural sorts of draw objects into  
3 image data constituted by a plurality of pixel data, wherein:

4 while said program is read to be executed by a computer, both first  
5 converting means for converting said document data into first image data,  
6 and second converting means for converting said first image data into  
7 second image data are constituted on said computer; and

8 said second converting means includes:

9 area unit converting means, as to each of areas obtained by  
10 subdividing said first image data by plural number, for converting first  
11 image data of said area into second image data with reference to a table  
12 containing information which should be referred to in the case that the  
13 first image data is converted into the second image data, and said first  
14 image data is previously prepared in correspondence with a sort of draw  
15 object contained in said area and also is obtained by converting said sort  
16 of draw object;

17 pixel unit converting means, as to each of pixel data constituting  
18 said first image data, for converting said pixel data into second image data  
19 with reference to a table containing information which should be referred  
20 to in the case that the first image data is converted into the second image  
21 data, and said first image data is previously prepared in correspondence  
22 with a sort of draw object indicated by said pixel data and also is obtained  
23 by converting said sort of draw object; and

24 conversion switching means for applying said pixel unit  
25 conversion means to such an area wherein at least two said tables are  
26 corresponded to sorts of draw objects contained therein, and for applying  
27 said area unit conversion means to such an area wherein one said table is  
28 corresponded to a sort of a draw object contained therein or to such an  
29 area containing no draw object, within said first image data.

1 11. A program product for converting document data constituted by  
2 containing plural sorts of draw objects into image data constituted by a  
3 plurality of pixel data, wherein:

4 while said program is read to be executed by a computer, both first  
5 converting means for converting said document data into first image data,  
6 and second converting means for converting said first image data into  
7 second image data are constituted on said computer; and

8 said second converting means includes:

9 area unit converting means, as to each of areas obtained by  
10 subdividing said first image data by plural number, for converting first  
11 image data of said area into second image data with reference to a table  
12 containing information which should be referred to in the case that the  
13 first image data is converted into the second image data, and said first  
14 image data is previously prepared in correspondence with a sort of draw  
15 object contained in said area and also is obtained by converting said sort  
16 of draw object;

17 pixel unit converting means, as to each of pixel data constituting  
18 said first image data, for converting said pixel data into second image data  
19 with reference to a table containing information which should be referred

20 to in the case that the first image data is converted into the second image  
21 data, and said first image data is previously prepared in correspondence  
22 with a sort of draw object indicated by said pixel data and also is obtained  
23 by converting said sort of draw object; and

24 conversion switching means for applying said pixel unit  
25 conversion means to such an area wherein at least two said tables are  
26 corresponded to sorts of draw objects contained therein, and for applying  
27 said area unit conversion means to such an area wherein one said table is  
28 corresponded to a sort of a draw object contained therein or to such an  
29 area containing no draw object, within said first image data.

1 12. An image converting method for converting document data  
2 constituted by containing plural sorts of draw objects into image data  
3 constituted by a plurality of pixel data, comprising:

4 a first converting step for converting said document data into first  
5 image data; and

6 a second converting step for converting said first image data into  
7 second image data; wherein:

8 said second converting step includes:

9 an area unit converting step, as to each of areas obtained by  
10 subdividing said first image data by plural number, for converting first  
11 image data of said area into second image data with reference to a table  
12 containing information which should be referred to in the case that the  
13 first image data is converted into the second image data, and said first  
14 image data is previously prepared in correspondence with a sort of draw  
15 object contained in said area and also is obtained by converting said sort

16 of draw object; and

17 a pixel unit converting step, as to each of pixel data constituting  
18 said first image data, for converting said pixel data into second image data  
19 with reference to a table containing information which should be referred  
20 to in the case that the first image data is converted into the second image  
21 data, and said first image data is previously prepared in correspondence  
22 with a sort of draw object indicated by said pixel data and also is obtained  
23 by converting said sort of draw object; and wherein

24 said pixel unit converting step is applied to such an area wherein  
25 at least two said tables are corresponded to sorts of draw objects contained  
26 therein, and said area unit converting means is applied to such an area  
27 wherein one said table is corresponded to a sort of a draw object contained  
28 therein or to such an area containing no draw object, within said first  
29 image data.